

Installing the MEON

If mounting on standard rack rails it is important that four standard rack screws be used with plastic washers. When plugged into 120 – 240 VAC (120 VAC *only* for those units purchased prior to June 2008, serial numbers prior to 0107) mains power, the MEON is capable of up to 18 Amps of 12VDC current. This capacity assumes proper ventilation and an ambient temperature of 80°F (27°C). For proper ventilation there should be a minimum free-air-space of one rack-space (1-3/4") above and 1/2" below the MEON. If sitting on a flat surface, the supplied rubber feet should provide adequate free air space below the MEON. Also, the top cover should not be removed because 1) the top cover adds strength to the chassis needed for rack mounting, and 2) the top cover aids cooling by directing convection airflow where it is needed.

Charging the MEON

The MEON's internal battery is connected to its charger whenever 120 – 240 VAC is present. The five red LEDs labeled "Fuel Gauge" indicate the amount of charge remaining in 20% increments. The single LED on the right labeled "Charging Progress" verifies that charging is taking place at either the full rate, finishing rate, or maintaining rate, as indicated by the label. When fully charged, the LED status indicator is a steady green. Due to the microprocessor charge/discharge controller, the MEON can remain connected to AC power indefinitely without fear of overcharging.

When the MEON is fully discharged, it will recharge to approximately 99% of its capacity in 7 hours. However, it is normal for the charging status LEDs to take much longer than 7 hours to change to steady green (indicating 100% charge). The MEON can be recharged from any state of discharge and can be partially recharged before reconnecting to a load, without fear of "memory effect." So that the MEON is ready to provide its full capacity when needed, it is recommended that it be fully charged whenever possible. Also, to assure maximum life from the MEON's internal battery, it is recommended that it be fully charged prior to extended periods of non-use, and charged at least every four weeks while not in use.

Connecting the MEON

There are twelve DC power outlets on the back of the MEON, wired in the standard 4-pin XLR configuration of PIN 4 +, PIN 1 -. Each outlet has auto-resetting breakers to protect against overload. The outlets are arranged in four groups of three, as indicated on the back panel. Each group of three is limited to a total of 13 Amps. The first outlet in each group has a capacity of 13 A while the remaining two outlets in each group are limited to 6 A each. A master 20 A breaker (only on MEONs purchased after January 2009) protects against combined overload when multiple outlets are used.

This allows a typical sound cart (drawing 13 A or less) to be powered through a single XLR outlet if desired. For example, if power distribution to the devices on a cart is done remotely, such as through the Remote Audio "BDS", "Hot Box", or "Hot Strip", a single 13 A XLR outlet on the MEON may be used power multiple devices. Or each device being powered can be cabled directly to the MEON's twelve outlets.

(NOTE: See "Four Levels of Overload Protection" and "Power Cables" section below.)

Using the MEON

To turn the MEON ON, press both ON buttons. To turn the MEON OFF, press both OFF buttons. Pressing any one of these buttons by itself will have no effect. This is to prevent accidental turning ON or turning OFF.

When plugged into 120 - 240VAC and when turned on, the MEON's internal AC-DC circuit is activated after three seconds and then supplies power to the outputs. The internal battery is then automatically connected to its charger. Assuming the battery has an adequate charge, the MEON can be removed from AC power and the battery will instantly and seamlessly take over. When AC power is restored, the AC-DC circuit seamlessly takes over and the battery is reconnected to its charger.

The MEON's internal AC-DC power supply (which supplies power when plugged into a 120 – 240 VAC mains power) is rated for 18 A maximum. This rating, however, assumes a maximum ambient temperature of 80°F (27°C) and unrestricted airflow at the top and bottom of the MEON. When the environment does not meet these conditions, it is recommended that the current draw on the MEON, when on AC power, be kept below 15 A to reduce the chances of unintentional shutdown. The current draw is easily monitored with the MEON's Amp meter.

Four levels of overload protection

The MEON's outlets are protected with auto-resetting 13 A and 6 A breakers, as indicated next to each outlet. The total output of the MEON is also protected by a master breaker, rated at 20 A, located on the back panel. This master breaker does not reset automatically. If the breaker trips due to an overload or short circuit condition, its reset button will stick out. To reset the breaker, remove whatever is causing the overload (likely a shorted cable) and then push the button back in.

When AC is present, at some point beyond 18 A indicated on the MEON's Amp meter (20 A typically, but dependent somewhat on ambient temperature), the MEON's AC-DC supply will go into "current-limiting mode," essentially shutting down the MEON due to low voltage, without tripping the master circuit-breaker. This condition causes a voltage reading of around 9 V on the MEON's meter, and will be accompanied by a noticeable chattering sound from the routing relays. To prevent excessive wear to the relays, this unlikely condition should be stopped by turning off the MEON and reducing the load before turning it back on. Since most sound carts draw less than 10 A, and very rarely as much as 20 A, it is unlikely that you will ever experience the current-limiting protection mode of the MEON's internal AC-DC power supply.

Fuel Gauge

When using the MEON without AC power (i.e. when using the internal battery), the 5-LED fuel gauge illuminates to show remaining battery capacity. While the MEON's voltmeter can aid in determining the battery's state of charge, the fuel gauge is much more sophisticated than a simple voltmeter. It combines data including voltage, Amp-Hours used, battery temperature, amount of charge prior to discharging, and rate of discharge at current load to accurately calculate the battery's remaining charge.

Sleep Mode

When turned off and disconnected from AC power for more than 24 hours, the MEON battery will go into "sleep mode," turning off its internal controller/processor to reduce the self-discharge of the battery. This allows the MEON to retain a charge for extensive periods without having to be plugged in to AC power. Plugging into AC power will bring the MEON out of sleep mode instantly. But when in sleep mode and not plugged into AC power, pressing the ON buttons will not turn the MEON ON. When this is the case, pressing the TEST button on the front panel will instantly bring the MEON out of sleep mode, and after a short analyzing period, the battery's state of charge will be displayed on the front panel. The MEON will then function normally and can be turned on without AC power.

Supplemental External Lead-Acid Batteries

External sealed lead-acid batteries (often know as "Gel Cells") may be used with the MEON to provide additional Amp-Hour capacity. Connecting lead-acid batteries to any of the MEON's outlets will route the battery through the other outlets, extending the Amp-Hour capacity of the MEON beyond its internal battery. Keep in mind that the Amp meter will then seem to be in error because it will not display the current being supplied by the external battery. Also, the current capacity of the external battery will be limited to the rating of the outlet being used. The MEON's AC-DC supply is set at the factory to output 13.8 VDC, which optimally maintains a charged lead-acid battery. However, a properly sized dedicated lead-acid battery charger should be used to recharge an external lead-acid battery.

DC Power Cables

There is always some voltage drop in power cables, but the goal is to keep this drop as insignificant as possible. When using a battery system, managing this voltage drop is particularly important and can actually add hours of use before recharging is needed. For example, if a piece of equipment automatically shuts down when it's supply voltage goes below 11 Volts, and there is a 1 Volt drop in the cable, then the equipment will shut down when the battery supply goes below 12 volts. Since much of the capacity of most 12 Volt battery systems is between 12V and 11V, it is easy to see how important it is to minimize the voltage drop within a cable.

The amount of voltage drop in a cable depends on three factors: 1) the amount of current drawn by the device being powered, 2) the size of the conductors inside the cable, and 3) the length of the cable. Simply put, the larger the conductors and shorter the cable, the less the voltage drop will be. But the more the current draw of a piece of equipment, the more the voltage drop. Therefore, a small cable that would have an insignificant drop with equipment drawing only 250 mA (for example) may be completely inadequate for equipment drawing 6 Amps.

There are equations and formulas available to help determine the amount of voltage drop given the length of cable, size of conductors (gauge), and amount a current being drawn. The best practice, however, is to use cables that are as large and short as practical. With the MEON and a hand-held voltmeter, it is easy to know how much voltage drop is taking place. Measure the voltage at the connector going into the device being powered (with the device turned on) and compare that measurement with the voltage displayed on the front of the MEON. The difference is the amount of voltage lost within the cable(s).

Your Remote Audio dealer should be able to supply cables of proper length and gauge for your needs.

Are the MEON outputs filtered? No. In the majority of occasions when problem noise is caused by multiple devices sharing a single power supply, simple filters at the power supply would be insufficient or have no affect. DC-DC isolation converters can solve these rare issues by isolating the power supply from the device being powered. Therefore, it is recommended that when isolation is needed to solve power-loop noise, the Remote Audio "Juicer" isolating power cable (utilizing a 30 W DC-DC converter) be used between the MEON and the problem device.

So next time you have an early morning call, outside, and it's dark... and the Electrics are still running cable... but you need to get started... No problem. With the MEON, you're on.

Or you're halfway through a long dialog scene... great performance... the director is loving it... Then someone trips over your AC power cord and pulls it out while recording. No problem. With the MEON, you're on.

Or the AD calls for an unscheduled quick shot a hundred yards away. No AC power. No time for the genny. No problem. You roll your cart to the new set without having to power down. The quick shot turns into several hours. No problem. With the MEON, you're on.

The next time they ask if you're on, you can say, "MEON!"

Enjoy!